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For more information, call Allison Westfall at (208) 332-6812

Idaho students' science, math scores show strengths, needs

Idaho students performed near or above international and national averages on a prestigious math and science test, according to scores released today for the Third International Math and Science Survey (TIMSS) 1999.

Thanks to a $150,000 grant from the J.A. and Kathryn Albertson Foundation, Idaho was one of only 13 states that volunteered to participate in the intensive TIMSS process, which compares student and teacher data between nations throughout the world.

A representative sampling of eighth-graders throughout Idaho - more than 2,000 students from 35 districts - participated in the survey during the spring of 1999.

Overall science results show Idaho students' average score of 526 is significantly above the international average (488) and somewhat higher than the U.S. average (515). In math, Idahoans scored an average of 495 - slightly better than the international average (487) and slightly below the U.S. average (502).

Superintendent of Public Instruction Marilyn Howard said she had written to Gov. Dirk Kempthorne last month to suggest that they work together to develop an Idaho math initiative. She said the State Board of Education and Idaho's higher education institutions also are looking at how teachers are prepared and how students are to be assessed in math and science.

"One of the benefits of Idaho taking part in TIMSS is that the results give us some idea of where to focus our immediate attention," she said. "This is foundational information for designing future programs, and it is baseline information against which we will be able to measure our progress. This is a great head start for us."

Howard said the TIMSS report would help Idaho schools prepare to implement the state's new achievement standards. One task will be to organize math and science curricula for maximum effect.

"Our new achievement standards and our global economy demand a higher level of math and science learning for all students," she said. "We look forward to examining the wealth of other information gathered in the TIMSS assessment, including surveys of teachers about professional development and of students about their opinions of the importance of math and science."

Although the TIMSS report is large and will take more time to thoroughly analyze, preliminary study of the results identifies several areas of concern:

Girls lag behind boys in science scores

Although female eighth-graders scored the same as boys in math, their science scores were significantly lower than boys' in all science subject areas. That trend is echoed in

other states' results and the national average, but it highlights the importance of presenting science curricula in ways that engage all students, Howard said.

Relatively few math teachers majored in math
Eighth-grade math teachers also were surveyed, and fewer than two out of three reported that they majored in mathematics or math education, a figure significantly lower than the national average or any other participating state. For example, 28 percent of Idaho math teachers majored in math, compared to 41 percent nationwide; 34 percent majored in math education compared to 37 percent nationwide. The results do not identify how many of those teachers majored in both math and math education.

Perhaps because of the lack of specialized training, fewer Idaho math teachers expressed confidence in their math teaching ability than their counterparts nationwide or in other states.

Research shows that higher student achievement in mathematics is associated with teachers who have a university degree in the subject they are teaching.

Professional development for teachers will be a key element in efforts to improve math and science curricula and to attract more students and teachers to those fields, Howard said.

"Eighth-grade math teachers sent us a clear message that we should encourage more young people to pursue math majors and provide them more support once they are on the job," Howard said.

Hispanic and limited-English scores raise concern
Scores for Idaho's Hispanic and Limited English Proficiency students lag below the state average. That trend is found in all English-language standardized testing in Idaho, and the State Department of Education and individual districts are working to correct that trend.

Average scores for white Idaho students were 537 in science and 506 in math, compared to 451 and 432 for Hispanic students. Students who said they always speak English at home scored 534 in science and 501 in math, compared with 444 and 430 for students who sometimes speak English at home.

The findings spotlight the importance of continuing efforts to adjust curricula to reach all Idaho students, Howard said.

"It is important to keep this new data in context as one indicator of student performance," Howard said. "The information from TIMSS and other assessments and surveys taken during the past two years will assist us as we strive to improve student learning in math and science."

For the past two years, the department has worked with various groups to gather data to get a clear picture of math and science education from student performance to teacher training. Some findings include:

· Higher-level math courses - Results of ACT tests taken by high school juniors and seniors show that students who take advanced math courses such as trigonometry

and calculus score significantly higher than students who take two years of algebra and a year of geometry. Of the more than 10,500 Idaho students who took the ACT in 2000, only 5,600 reported they had completed four or more years of math.

· Math and science career choices - ACT data show that fewer than 490 high school graduates planned to major in sciences, 545 planned to major in engineering, 403 in computer and information sciences, and 32 in math.

· Assessments - To measure progress, Howard said Idaho should continue to participate in TIMSS, which will be offered again in 2003. Later this year, the state will receive results from a test taken by fourth- and eighth-graders: the National Assessment of Educational Progress. The state also has reviewed and modified its Direct Math Assessments to reflect state standards.

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(Editors and reporters: For more information on the TIMSS report, visit the Web site www.timss.org.)